



Applicant: Houston *et al.*  
For: SMART CULTURE VESSEL

1           1.     A smart culture vessel for holding a sample to be tested in a culture  
2 medium comprising:

3                     a bio-sensor, in the vessel in the culture medium with the sample  
4 having a coating for attracting at least one pathogen expected in the sample; and  
5                     a detection circuit responsive to the bio-sensor for indicating the  
6 presence of a pathogen on the bio-sensor.

1           2.     The smart culture vessel of claim 1 in which the bio-sensor includes an  
2 array of bio-sensor elements.

1           3.     The smart culture vessel of claim 2 in which each bio-sensor element has a  
2 different coating for attracting pathogens.

1           4.     The smart culture vessel of claim 1 in which the detection circuit drives  
2 the bio-sensor over a range of predetermined frequencies and detects a shift in frequency  
3 over time due to the attached pathogen.

1           5.     The smart culture vessel of claim 1 in which the detection circuit is  
2 external to the vessel.

1           6.     The smart culture vessel of claim 4 in which the range of predetermined  
2 frequencies is near the resonant frequency of the bio-sensor.

1           7.     The smart culture vessel of claim 1 in which the detection circuit drives  
2 the bio-sensor at a predetermined frequency and detects a shift in frequency due to the  
3 attached pathogen.

1           8.     The smart culture vessel of claim 7 in which the predetermined frequency is  
2 the resonant frequency of the bio-sensor.

1           9.     The smart culture vessel of claim 6 in which the shift in frequency is a shift  
2 in the resonant frequency of the bio-sensor.

1           10.    The smart culture vessel of claim 8 in which the shift in frequency is a shift  
2 in the resonant frequency of the bio-sensor.

1           11.    The smart culture vessel of claim 1 in which the detection circuit  
2 continuously drives the bio-sensor over a range of predetermined frequencies and detects  
3 a shift in frequency over time due to the attached pathogen.

1           12.    The smart culture vessel of claim 1 in which the detection circuit drives  
2 the bio-sensor over a range of predetermined frequencies and instantaneously detects a  
3 shift in resonant frequency due to the attached pathogen.

1           13.    The smart culture vessel of claim 1 in which the detection circuit  
2 continuously drives the bio-sensor at its resonant frequency and detects a shift in  
3 frequency due to the attached pathogen.

1           14.    The smart culture vessel of claim 1 in which the detection circuit drives  
2 the bio-sensor at its resonant frequency and instantaneously detects a shift in frequency  
3 due to the attached pathogen.

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